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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/802,280	Applicant(s) FRANCESCHINI ET AL.
	Examiner Jean B. Corrielus	Art Unit 2611

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 12/18/08.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 16-30 and 35-38 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 16-30 and 35-38 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 18 December 2008 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____
 5) Notice of Informal Patent Application
 6) Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the steps of identifying, creating adapting, as recited in claim 16, the step of adapting as recited in claim 21, the data source and the modulator in combination with the transmitter, as recited, as recited in claim 35, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Drawings

2. The drawings were received on 12/18/08. These drawings are not acceptable. Because the drawing still fails to show the combination of a transmitter and associated limitations, data source and modulator. It also fails to show the limitations recited in the method claims.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 16-30 and 35-38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. With respect to claim 16, the claim recites: "**identifying a signal space for wireless communication, the signal space including a range of frequencies; creating a waveform for the signal space, the waveform organized into a plurality of sub-bands**, each one of the plurality of sub-bands defined by **one of a plurality of time- frequency tiles characterized by a bandwidth and an integration time; adapting at least one of the bandwidth and the integration time of one of the plurality of the time-frequency tiles to provide a channel having a tile size selected to maintain a predetermined phase coherency across the time-frequency tile; modulating a data signal onto the waveform using**

direct sequence spreading for each one of the plurality of sub-bands, thereby providing a transmit signal; and transmitting **the transmit signal into the signal space.”**

However, the specification, as filed does not provide support for such limitations (emphasis added on the bolded limitations) as claimed.

Similar comment applies to the following limitations, recited in : claim 17 “ **creating a waveform includes adding a preamble that includes an indication of the bandwidth and the integration time of at least one of the plurality of time-frequency tiles.**

claim18” **wherein the preamble includes an indication of one or more of an M-ary alphabet size and a data rate for the at least one of the plurality of time-frequency tiles”.**

Claim 19 “ **wherein at least one of the m-ary alphabet size and the data rate vary over time”.**

Claim 20 “ **wherein the m-ary alphabet size and the data rate vary from burst to burst in a packetized data system”**

Claim 21 “ **adapting the bandwidth and the integration time of all of the time-frequency tiles** to provide a plurality of channels each having a coherent time-bandwidth product”.

Claim 22.” **wherein all of the time-frequency tiles have a common bandwidth and a common integration time”.**

Claim 23 " adapting at least one of the bandwidth and the integration time includes changing at least one of the bandwidth and the integration time between a plurality of bursts of data transmission".

Claim 24 " an actual phase coherency of a channel is determined according to one or more of experiment, radio frequency monitoring, and an estimate for an environment".

Claim 30 "wherein the transmit signal carries the data signal at a magnitude substantially within a noise floor for the signal space".

Claim 35" a transmitter adapted to create a waveform for a signal space including a range of frequencies, the waveform organized into a plurality of sub-bands, each one of the plurality of sub-bands defined by one of a plurality of time-frequency tiles characterized by a bandwidth and an integration time, the waveform including a preamble that includes the bandwidth and the integration time of the plurality of time-frequency tiles, the transmitter further adapted to adjust the bandwidth and the length of time of one of the time-frequency tiles to provide a channel having a tile size selected to maintain a predetermined phase coherency across the time-frequency tile; and a modulator adapted to modulate the data signal onto the waveform using direct sequence spreading for each one of the plurality sub-bands, thereby provide providing a transmit signal; wherein the transmitter is further adapted to transmit the transmit signal into the signal space."

As per claim 36, see claim 17.

As per claim 37, see claim 21.

As per claim 38, see claim 22.

Note that any claim whose base claim is rejected is likewise rejected.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 16-30 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent¹ and recent Federal Circuit decisions² indicate that a statutory “process” under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim recites a series of steps or acts to be performed, the claim neither transforms underlying subject matter nor is positively tied to another statutory category that accomplishes the claimed method steps, and therefore does not qualify as a statutory process. For example the transmitting method including steps of identifying, creating adapting modulating and transmitting is of sufficient breadth that it would be reasonably interpreted as a series of steps completely performed mentally, verbally or without a machine. The claim does not recite any corresponding structure or hardware used to perform the method step(s) to effectively tie the process to another category class (apparatus).

¹ *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

² *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

Response to Arguments

7. Applicant's arguments filed 12/18/08 have been fully considered but they are not persuasive. Applicant argues that the drawings are not necessary for understanding the invention as claimed in the method claim. However, it is noted that 37 CFR 1.83(a) clearly states that **the drawings must show every feature of the invention specified in the claims**. Accordingly, the method claim steps, as recited in the method claims must be shown or the feature canceled from the claim(s). With respect to the apparatus claim, applicant argues that fig. 1 shows the transmitter 110 that receives data from a modulator 10. While fig. 1 shows a transmitter 110, the transmitter 110 however is disclosed and showed in the drawing and specification as including a modulator 10, an exciter 20, and an amplifier 30. There is no disclosure or drawing having a transmitter 100, a modulator 10, an exciter 20, and an amplifier 30 as now recited generally in the claims. Applicant further argues that page 2 of the provisional application and paragraph 0034 of the utility application provide support for the limitation "identifying a signal space for wireless communication". However, it is noted that the section of the specification refers to by applicant only teaches that "fig. 1 illustrates a signal space of a two dimensional time/frequency plane for data and spread spectrum chip modulation. there is no reference to identifying a signal space. the disclosure only teaches the illustration of a signal space. Applicant further alleges that fig. 1 and paragraph 0021 of the utility application describes the apparatus required for the creation of the waveform. However, it is noted the specification with respect to the description of fig. 1 does not include any reference to "creating the waveform for signal space". Paragraph 0021 of

the published application only teaches input data is encoded and modulated and the resulting modulated signal is fed to an exciter to upconvert the modulated signal to a higher frequency for transmission. Applicant further alleges that support for the limitations "adapting at least one of the bandwidth and the integration time of one of the plurality of the time-frequency tiles to provide a channel having a tile size selected to maintain a predetermined phase coherency across the time-frequency tile" can be found in paragraph 0023 of the published application. However, paragraph 0023 of the published application does not include any reference to "adapting at least one of the bandwidth and the integration time of one of the plurality of the time-frequency tiles to provide a channel having a tile size selected to maintain a predetermined phase coherency across the time-frequency tile". Applicant further argues that support for the limitation "modulating data onto the waveform" can be found in fig. 2A. However, fig. 2A and the corresponding text do not include any reference to "modulating a data signal onto the waveform". It is the applicant's position that the specification at paragraph 0021 provides support for the limitation "transmitting the transmit signal into the signal space". However, it is noted that such section of the specification does not include any reference to "transmitting the transmit signal into the signal space". It is the applicant's position that the specification at paragraph 0023 provides support for the limitations "The method of claim 16 wherein creating a waveform includes adding a preamble that includes an indication of the bandwidth and the integration time of at least one of the plurality of time-frequency tiles." However it is noted that the such section of the specification does not provide any specific support for

"The method of claim 16 wherein creating a waveform includes adding a preamble that includes an indication of the bandwidth and the integration time of at least one of the plurality of time-frequency tiles." recited in the claim. Applicant alleges that the specification at paragraph 0023 provides support for the limitations "18. The method of claim 17 wherein the preamble includes an indication of one or more of an M-ary alphabet size and a data rate for the at least one of the plurality of time-frequency tiles." However it is noted that such section of the specification does not provide any specific support for "18. The method of claim 17 wherein the preamble includes an indication of one or more of an M-ary alphabet size and a data rate for the at least one of the plurality of time-frequency tiles." recited in the claim. Examiner does not agree that the specification at paragraph 0023 provides support for the limitation recited in claim 19. Such section of the specification teaches at best variable alphabet sizes and data rates are used. Applicant alleges that the specification at paragraph 0023 provides support for the limitations "20. The method of claim 19 wherein the M-ary alphabet size and the data rate vary from burst to burst in a packetized data system." However it is noted that the such section of the specification does not provide any specific support for " The method of claim 19 wherein the M-ary alphabet size and the data rate vary from burst to burst in a packetized data system" recited in the claim. The examiner does not agree with the applicant that the specification at paragraph 0034 provides support for the limitation recited in claim 21. such section of the specification does not include any reference to "21. The method of claim 16 further comprising adapting the bandwidth and the integration time of all of the time-frequency tiles to provide a

plurality of channels each having a coherent time-bandwidth product". With respect to claim 22, applicant argues that paragraph 0034 provides support for the limitation recited in the claim. However it is noted that such section of the specification only teaches "each subband can become a single frequency bin integrated over a full data bit time". There is no disclosure about "The method of claim 16 wherein all of the time-frequency tiles have a common bandwidth and a common integration time", recited in the claim. With respect to claim 23, the comment did not indicate where support can be found in the non-provisional application for the claimed subject matter. With respect to claim 24, the section of the provisional application teaches that the phase coherency of a channel is determined according to experiment, radio frequency monitoring, and an estimate for an environment. Such section of the specification however does not teach "24. The method of claim 16 wherein an actual phase coherency of a channel is determined according to one or more of experiment, radio frequency monitoring, and an estimate for an environment", as recited in the claim. It is the applicant's position that paragraph 0036 provides support for the limitation recited in claim 30. However, a review of paragraph 0036 fails to show such a support for the claimed subject matter. With respect to claim 35 see comment made with respect to claim 16 and 17 above. In addition, the disclosure of the original application does not include an embodiment where a device includes a data source, a transmitter and a modulator. The embodiment of fig. 1 only teaches transmitter 110 comprising an input for receiving a data signal from a source (not shown), a modulator 10 for modulating the data signal an exciter for upconverting the modulated signal into a transmit

frequency modulated signal , an amplifier 30 for amplifying the frequency modulated signal transmitted by antenna 40. See paragraph 0021 of the published version of the non-provisional application. As per claim 36, see claim 17. As per claim 37, see claim 21. As per claim 38, see claim 22.

In view of the above analysis, examiner maintains that the disclosure of prior filed application(s) fails to provide support implicitly or explicitly for the subject matter, recited in the claim as set forth in the above rejection. in other words, when viewed in its entirety, the originally filed provisional application fails to convey the scope of the applicant's invention and describe the presently claimed invention in sufficient detail so that one skilled in the art could reasonably conclude that the applicant had possession of the invention at the time the provisional application was filed. Further, the provisional application fails to provide adequate support for the claim language as noted in the above rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is 571-272-3020. The examiner can normally be reached on Monday-Thursday from 9:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jean B Corrielus/
Primary Examiner
Art Unit 2611